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PROTECTION AGAINST LIGHTNING

A radio talk by Mr. H. E. Roethe, Bureau of Chemistry and Soils, on the Department of Agriculture noonhour network program, through Station WRC and 17 stations associated with the National Broadcasting Company, on Wednesday, May 8, 1929, at 1:23 p. m., Eastern Standard Time.

Flash of Lightning,
Fire and smoke,
Barn is gone
And farmer broke.
He intended
to insure;
Also lightning
rods procure.

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Most everyone has seen at some time or another the vivid displays of lightning flashes and at the same time experienced more or less fear over the possible destruction caused by nearby bolts.

Lightning is an electrical spark on a tremendous scale. A single flash may represent released electrical energy of several millions of volts. These flashes may occur between clouds or between a cloud and the earth. Lightning always follows the path of least resistance. In discharging to the earth lightning causes death and destruction if human beings or structures happen to be in this path.

The annual farm property loss from lightning has been estimated to be \$20,000,000 as a minimum. The number of farm persons killed each year by lightning is between 400 and 500 while the number of such persons injured from this cause is more than twice the number of deaths. That is a large loss, isn't it? And the question naturally arises as to what can be done to reduce that loss.

The fundamental theory of lightning protection for buildings is to provide means by which a discharge may enter or leave the earth without

passing through a non-conducting part of the structure, as for example, parts which are made of wood, brick, tile or concrete. The required condition that there be a metallic path for that part of the discharge which is intercepted is met most fully by a grounded metal or metal-covered structure which presents what might be thought of as an infinite number of parallel conductors from the uppermost part of the structure to earth.

I venture to say that the subject of lightning also brings up in your mind this question: "Are lightning rods really any good?" The answer is emphatically yes.

Unfortunately years ago the unscrupulous "lightning rod shark," so-called, who might be likened to the present day individual selling the worthless "one and only cure-all," was very much in evidence. He reaped his harvest, defrauded the farmer, and at the same time was the cause of a deep-seated, widespread prejudice being created against lightning protection.

That protection of property against lightning can be effected is an established fact. And fortunately the scheming "lightning rod shark" has passed on. According to available statistics properly installed and well-maintained rods are practically 100 per cent efficient in preventing lightning damage. Furthermore, a substantial metal roof, with all parts in good electrical contact, can be utilized as a part of the lightning-protection system and thus be made to serve a double purpose. The cost of grounding and making other necessary electrical contacts with interior masses of metal is relatively small. Fences enclosing livestock can be grounded at reasonable intervals, and protection thus be afforded the animals.

The installation of lightning protection systems should be done only by competent, reliable workmen, with a thorough knowledge of the subject. It is also vitally important that such protection, once installed, be properly maintained.

So much for the protection of property. Let us consider the safeguarding of human life.

The observance of the following rules will prevent many deaths and injuries from lightning:

I. Do not go out of doors or remain out during thunderstorms unless it is absolutely necessary. Stay inside of a building where it is dry, preferably near the center of a room.

II. If there is any choice of shelter, choose in the following order:

1. Large metal or metal-frame buildings.
2. Dwellings or other buildings which are protected against lightning.
3. Large unprotected buildings.
4. Small unprotected buildings.

III. During thunderstorms avoid the immediate vicinity of:

1. Electric light circuits.
2. Lightning conductors and downspouts.
3. Screened doors and windows.
4. Stoves and fireplaces.
5. Telephones or any metal object that projects through the walls or roof of the building.

IV. If remaining out of doors is unavoidable, keep away from:

1. Isolated trees.
2. Wire fences.
3. Hill tops and wide open spaces.
4. Small sheds and shelters if in an exposed location.

Try to reach thick timber, a cave, a depression in the ground, a deep valley or canyon or the foot of a steep or overhanging cliff if there are any of those in the vicinity.

The United States Department of Agriculture strongly recommends protection of buildings and farm property from lightning. Now listen closely because I am going to mention some good publications on the subject:

Farmers' Bulletin No. 1512, which contains practical information on the subject together with definite specifications for installing the equipment, will be gladly sent to any one writing for it to the United States Department of Agriculture at Washington. The Safety Code for Protection of Persons and Buildings against Lightning, which can be obtained from the National Fire Protection Association, Boston, Mass., will also be found to be of interest and value. Then there is the Code on Lightning Protection, published by the Bureau of Standards, United States Department of Commerce, Washington -- also very good.

And remember these three words: DON'T DEFY LIGHTNING!

Harry E. Roethe,

Engineer.

